

REMARKS

The pending Office Action addresses and rejects claims 1, 4-35, 56, 57, and 59-63. Applicants respectfully request reconsideration and allowance based on the remarks submitted herewith.

At the outset, Applicants thank Examiners Yang and Barrett for extending the courtesy of a telephone interview on May 4, 2009 to the undersigned Attorney for Applicants and Attorney Lisa Adams. During the interview, agreement was reached that the amendments made herein overcome all of the present rejections.

Amendments to the Claims

Applicants amend claims 1, 56, and 60 to recite that the distal surface of the connecting plate bears against a proximal terminal end surface of *each* of the opposed arms of the rod receiving portion of at least one of the bone anchors. Applicants also amend claim 1 to recite that the connecting plate connects at least two bone anchors. Support for these amendments can be found throughout the specification, for example at paragraphs [0061] and [0062] and Figures 1A and 1B of the published application. Applicants amend claim 4 to recite that a set screw extends through the connecting plate. Support for this amendment can be found throughout the specification as well, for example at paragraphs [0057] and [0059] and Figures 1A and 1B of the published application. No new matter is added.

Rejections Pursuant to 35 U.S.C. § 102(b)

U.S. Patent No. 5,688,272 of Montague et al.

The Examiner rejects claims 1, 4-12, and 15 pursuant to 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,688,272 of Montague et al. ("Montague").

Claim 1 recites a spinal fixation system that includes a connecting plate having a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors, and further, that the connecting plate connects at least two of the at least two bone anchors. Montague does not disclose such a spinal fixation system. Although the connecting plate (10, 12) of Montague does connect at least two bone anchors (200), it does not bear

against a proximal terminal end surface of *each of the opposed arms* of the rod receiving portion (30). Rather, the rod receiving portion (30) of Montague is received only by a space (15) and an opening (18) of the connecting plate (10, 12). (See col. 7, lines 48-51.) As shown in FIG. 6, which is reproduced to the right, only one portion of one of the arms of the rod receiving portion (30) can possibly bear against a distal surface of the connecting plate (10, 12). The other arm of the rod receiving portion (30) is located below the rod (R) and cannot contact the connecting plate (10, 12). Further, although the clamp assembly washer (220) of Montague can engage each of the opposed arms of the rod receiving portion (30), it is not the recited connecting plate because it does not connect at least two bone anchors.

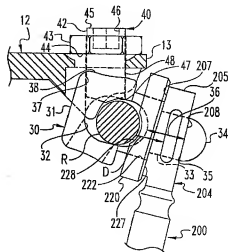


Fig. 6

Accordingly, claim 1, as well as claims 4-12 and 15 which depend therefrom, represents allowable subject matter.

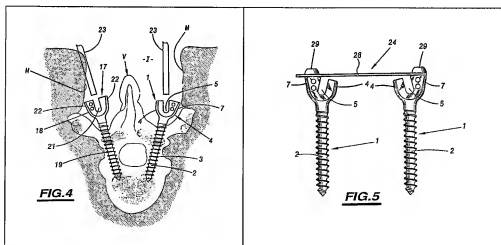
International Publication No. WO 01/47425 of Cavagna et al.

The Examiner rejects claims 1, 4, 17-20, 29, 56, 59, and 60-63 pursuant to 35 U.S.C. § 102(b) as being anticipated by International Publication No. WO 01/47425 of Cavagna et al. ("Cavagna").

Claims 1, 4, 17-20, and 29

Claim 1 recites a spinal fixation system that includes a connecting plate having a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors. Cavagna does not disclose such a spinal fixation system. Cavagna teaches a bone anchor (1) having an inclined channel (5) as being an improvement over anchors (17) that a standard channel (21). (See page 9, line 22 to page 10, line 26.) As illustrated by FIG. 4, which is reproduced below, the inclined bone anchor (1) taught by Cavagna allows a tool (23) to engage the anchor (1) without interfering with muscle tissue (M), while the standard anchor (17) can lead to interference with muscle tissue (M) by a tool (23). (*Id.*) When a connecting plate (28) is disposed between two of Cavagna's inclined anchors (1), as shown in FIG. 5, which is also reproduced

below, the plate (28) only engages *one* of the two arms (7) of each anchor (2). The other arm (4) does not engage the connecting plate (28).



Accordingly, claim 1, as well as claims 4, 17-20, and 29 which depend therefrom, represents allowable subject matter.

Claims 56 and 59

Claim 56 recites a spinal fixation system that includes a connecting plate having a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the receiving portion of the bone anchors. As discussed with respect to claim 1, Cavagna does not disclose such a spinal fixation system. The connecting plate (28) of Cavagna does not bear against each of the opposed arms (4, 7) of the receiving portion (5) of the bone anchors (1).

Accordingly, claim 56, as well as claim 59 which depends therefrom, represents allowable subject matter.

Claims 60-63

Claim 60 recites a method of fixing vertebrae relative to each other that includes positioning a distal surface of a connecting plate on a proximal terminal end surface of each of the opposed arms of a rod receiving portion of a bone anchor. Claim 60 also recites inserting a closure mechanism through the connecting plate to engage the rod receiving portion of the anchor. Cavagna does not

disclose either positioning a distal surface of the connecting plate on each of the opposed arms of the rod receiving portion or inserting a closure mechanism through the connecting plate to engage the rod receiving portion of the anchor. As discussed with respect to claim 1, the connecting plate (28) of Cavagna cannot be positioned such that its distal surface is on a proximal terminal end surface of *each* of the opposed arms (4, 7) of the rod receiving portion (5) of the bone anchors (1). Further, while a closure mechanism (29) can be inserted through the connecting plate (28) of Cavagna, it does not engage the rod receiving portion (5) of the bone anchors (1). Instead it engages a threaded hole (11) of one of the arms (7) of the anchor (1). (*See* page 10, lines 23-26.) Thus, Cavagna fails to teach either of these recitations.

Accordingly, claim 60, as well as claims 61-63 which depend therefrom, represents allowable subject matter.

Claim 4

Claim 4, which depends from claim 1, is further patentable over Cavagna because it recites a set screw that extends through the connecting plate and threadably engages the rod receiving portion of the bone anchor. As discussed with respect to claim 60, the closure mechanisms (29) of Cavagna do not both extend through the connecting plate (28) and engage the rod receiving portion (5) of the bone anchor (1). Accordingly, claim 4 is allowable at least because it depends from an allowable base claim, but it is further patentable over Cavagna.

Rejections Pursuant to 35 U.S.C. § 103(a)

U.S. Patent No. 5,688,272 of Montague et al.

The Examiner rejects claim 16 pursuant to 35 U.S.C. § 103(a) as being obvious over Montague. In particular the Examiner argues that Montague discloses the recited invention except for the cap threadably engaging the set screw via a bore in the set screw. At least because Montague fails to disclose each of the recitations of independent claim 1, from which claim 16 depends, claim 16 represents allowable subject matter.

U.S. Patent No. 5,688,272 of Montague et al. in view of U.S. Patent No. 5,129,899 of Small et al.

The Examiner rejects claims 13 and 14 pursuant to 35 U.S.C. § 103(a) as being obvious over Montague in view of U.S. Patent No. 5,129,899 of Small et al. ("Small"). The Examiner argues that Montague discloses the claimed invention except for a floating washer with a bearing surface that mates with the distal bearing surface of the cap and rails that slidably engage the connecting plate. The Examiner relies on Small to teach such a washer and such rails. The Examiner also lists U.S. Patent Application Publication No. 2004/0087949 of Bono et al. ("Bono") in this portion of the rejection, although no reference is made to Bono in the Examiner's arguments. At least because neither Small nor Bono remedy the deficiencies of Montague with respect to claim 1, from which claims 13 and 14 depend, this rejection cannot be maintained.

Neither Small nor Bono teaches or even suggests a spinal fixation system in which the connecting plate has a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors. Small does not teach or even suggest a rod receiving portion of a bone anchor, and thus it also fails to teach or even suggest a spinal fixation system in which the connecting plate has a distal surface that bears against a proximal terminal end surface of each of opposed arms of a rod receiving portion. Bono, which is directed to snap-in washers and assemblies, also does not teach or even suggest a rod receiving portion of a bone anchor, and thus also fails to remedy the deficiencies of Montague.

Accordingly, at least because claims 13 and 14 depend from allowable base claim 1, claims 13 and 14 also represent allowable subject matter.

International Publication No. WO 01/47425 of Cavagna et al. in view of U.S. Patent No. 5,366,455 of Dove et al.

The Examiner rejects claims 21-27 pursuant to 35 U.S.C. § 103(a) as being obvious over Cavagna in view of U.S. Patent No. 5,366,455 of Dove et al. ("Dove"). The Examiner argues that Cavagna discloses the claimed invention except for a plate that has a spanning member that is arcuate in shape and a hole that is circular or elliptical in shape. The Examiner relies on Dove to teach such a plate. At least because Dove fails to remedy the deficiencies of Cavagna with respect to claim 1, from which claims 21-27 depend, this rejection cannot be maintained.

Dove does not teach or even suggest a spinal fixation system in which the connecting plate has a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors. The plate (10) of Dove is secured to bone by way of pedicle screws (29) that pass through the plate (10). (*See* col. 3, lines 5-12 and FIG. 9.) Heads of the screws (29) sit on top of the plate (10) to hold the plate (10) in place. (*Id.*) The plate (10) does not bear against a proximal terminal end surface of opposed arms of a rod receiving portion.

Accordingly, at least because claims 21-27 depend from allowable base claim 1, claims 21-27 also represent allowable subject matter.

International Publication No. WO 01/47425 of Cavagna et al. in view of U.S. Patent Application Publication No. 2004/0186474 of Mathis et al.

The Examiner rejects claims 30-35 and 57 pursuant to 35 U.S.C. § 103(a) as being obvious over Cavagna in view of U.S. Patent Application Publication No. 2004/0186474 of Mathis et al. ("Mathis"). The Examiner argues that Cavagna discloses the claimed invention except for using polyaxial screws that have a radius of curvature about a point which the bone screw pivots for the bone anchors. The Examiner relies on Mathis to teach such screws. At least because Mathis fails to remedy the deficiencies of Cavagna with respect to claim 1, from which claims 30-35 depend, and claim 56, from which claim 57 depends, this rejection cannot be maintained.

Mathis, which is directed to an implant having a shaft and a holding element, does not teach or even suggest a spinal fixation system in which the connecting plate has a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors. In fact, Mathis does not even disclose a plate for connecting two or more bone anchors together. Mathis, thus, fails to remedy the deficiencies of Cavagna.

Accordingly, at least because claims 30-35 and 57 depend from allowable base claims 1 and 56, claims 30-35 and 57 also represent allowable subject matter.

International Publication No. WO 01/47425 of Cavagna et al. in view of U.S. Patent No. 6,355,038 of Pisharodi

The Examiner rejects claim 28 pursuant to 35 U.S.C. § 103(a) as being obvious over Cavagna in view of U.S. Patent No. 6,355,038 of Pisharodi ("Pisharodi"). The Examiner argues that Cavagna

discloses the claimed invention except for the opening of a connecting plate being open ended. The Examiner relies on Pisharodi to teach such a plate. At least because Pisharodi fails to remedy the deficiencies of Cavagna with respect to claim 1, from which claim 28 depends, this rejection cannot be maintained.

Pisharodi does not teach or even suggest a spinal fixation system in which the connecting plate has a distal surface that bears against a proximal terminal end surface of each of the opposed arms of the rod receiving portion of at least one of the bone anchors. Each embodiment of a plate (32) of Pisharodi is secured to bone by way of a screw (34) that passes through the plate (32). (See col. 5, lines 25-38 and FIGS. 1-3, 12, and 14.) A nut (38) is used to secure the plate (32) to the screw (34) and the screw is disposed proximal of the nut (38). (*Id.*) The plate (32) does not bear against a proximal terminal end surface of opposed arms of a rod receiving portion of the screw (34).

Accordingly, at least because claim 28 depends from allowable base claim 1, claim 28 also represents allowable subject matter.

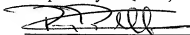
Conclusion

All pending claims are believed to be in condition for allowance. If the Examiner believes that an interview would facilitate the resolution of any outstanding issues, he is kindly requested to contact the undersigned.

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Respectfully submitted,



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